1. A method comprising:

forming a trench through said cladded waveguide;

partially filling said trench with a filler material; and

forming a thin film filter aligned with said waveguide on said filler material.

2. The method of claim 1 including partially filling said trench with a material whose index of refraction is close to that of cladding on said waveguide.

3. The method of claim 1 including detecting light of a first wavelength reflected by said thin film filter.

4. The method of claim 3 including detecting light of a second wavelength passed by said thin film filter and reflected by a reflective surface of said trench.

5. The method of claim 1 including forming a multilayer thin film filter that reflects light of at least one wavelength and passes light of another wavelength.

6. The method of claim 1 including using said filter to demultiplex a multiplexed signal including light at 1550 nanometers and light at 1490 nanometers.

7. The method of claim 6 including multiplexing a signal at 1310 nanometers.

8. An optical demultiplexer comprising:

a semiconductor substrate;

a waveguide core over said substrate;

a thin film filter to reflect light of at least one wavelength and to pass light of at least one other wavelength arranged in alignment with said waveguide core; and

a reflective surface aligned with said thin film filter and said waveguide core to reflect light of a wavelength passed by said thin film filter.

9. The demultiplexer of claim 8 including a photodetector arranged to detect light reflected by said thin film filter.

10. The demultiplexer of claim 8 including a photodetector to detect light reflected by said reflective surface.

11. The demultiplexer of claim 8 including upper and lower cladding on said core and a trench through said cladding defining said reflective surface, said trench filled with a filler material whose index of refraction

matches that of said cladding, said thin film filter formed on said filler material.

12. A method comprising:

forming a slot between a pair of waveguide cores in a planar light circuit; and

inserting a thin film filter between said waveguide cores.

13. The method of claim 12 including mounting said thin film filter on a U-shaped module so that a portion of said thin film filter is unsupported.

14. The method of claim 13 including forming an aperture in said planar light circuit to receive said module and inserting said thin film filter into said slot and inserting said module into said planar light circuit aperture.

15. The method of claim 14 including providing alignment marks on said module and said planar light circuit to align said module with said planar light circuit.

16. A planar light circuit comprising:

a first waveguide and a second waveguide, said waveguides separated by a slot; and

a thin film filter in said slot between said waveguides.

17. The circuit of claim 16 wherein said waveguide is attached to a module.

18. The circuit of claim 17 including an aperture in said planar light circuit to receive a portion of said module.

19. The circuit of claim 18 including alignment marks on said module and said planar light circuit.

20. The circuit of claim 19 wherein said module is U-shaped including a slot through its lower surface providing an unsupported portion of said thin film filter.

21. The circuit of claim 20 wherein said slot fits over a portion of said planar light circuit and allows one of said waveguides to pass through said module.

22. A planar light circuit comprising:
a first waveguide; and
a trench formed in said planar light circuit, said trench having a curved reflective surface, said surface to act as a mode converter.

23. The circuit of claim 22 wherein said reflector is spherical.

24. The circuit of claim 22 including a laser mounted over said trench on said circuit.

25. The circuit of claim 24 including a vertical cavity surface effect laser mounted over said trench.

26. The circuit of claim 22 including a detector mounted over said trench.

27. A method comprising:
forming a trench in a planar light circuit;
forming a curved reflective surface in said trench aligned with a waveguide in said circuit; and
using said reflective surface to convert the mode of light extending to or from said waveguide.

28. The method of claim 27 including mounting a laser over said trench on said circuit.

29. The method of claim 27 including forming a spherical reflective surface.

30. The method of claim 27 including mounting a vertical cavity surface effect laser over said trench.

31. The method of claim 27 including mounting a detector over said trench.